

KENTUCKY'S ENERGY ⚡ OPPORTUNITIES FOR OUR FUTURE



A COMPREHENSIVE ENERGY STRATEGY

2007 STATUS REPORT

June 2007

Kentucky
UNBRIDLED SPIRIT

GOVERNOR ERNIE FLETCHER

From the Governor...

Since the release of the original 54 recommendations of the Commonwealth's Energy Policy Task Force in February 2005, we have made steady progress in implementing the task force's recommendations across a wide spectrum of energy issues.

The principles that guide Kentucky's energy policy are:

- Maintain Kentucky's low-cost energy
- Responsibly develop Kentucky's energy resources
- Preserve Kentucky's commitment to environmental quality

With this report, we are proud to announce the progress made to date towards these goals. Much of this progress results from public-private partnerships. Many of our partners are highlighted in this report and I would like to recognize them for their outstanding contributions.



I invite you to take advantage of this *2007 Status Report* to learn more about the energy issues facing the Commonwealth. We are making great strides, but much work remains to be done.

This report is divided into “chapters,” if you will, that follow the broad policy areas described in the original strategy document: energy efficiency, renewable energy, low-cost electricity, coal, natural gas, and Kentucky's energy future.

You can play a role as we write the next chapter in Kentucky's energy future. I encourage you to find out more about these complex issues that affect all of us. Together we can develop our energy resources in a responsible manner, one that maintains Kentucky's low cost of living, creates opportunities for Kentucky's work force, and protects the environment for future generations.

Sincerely,

A handwritten signature in blue ink that reads "Ernie Fletcher".

Ernie Fletcher

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Introduction

This report is divided into sections that follow the broad policy areas described in *Kentucky's Energy: Opportunities for Our Future*. These are: energy efficiency, renewable energy, low-cost electricity, coal, natural gas, and Kentucky's energy future. For each section there is a set of initiatives that pertain to one or more of the original 54 recommendations.

Each initiative is followed by the recommendation number(s) most closely correlated to that initiative. For informational purposes, all 54 original recommendations have been reprinted here, beginning on page 27.

The section on **Energy Efficiency** highlights some of the actions we've completed to encourage conservation and energy efficient buildings, particularly in Kentucky schools. In many instances, it has been the Kentucky state government leading the way forward.

The **Renewable Energy** section describes some unique approaches to increase the production, consumption, and availability of biodiesel, ethanol, and other renewable fuels. Again, Kentucky state government has taken the lead in increasing the Commonwealth's use of ethanol and biodiesel.



In the section on maintaining Kentucky's **Low Cost Electricity** we describe a recent report by the Kentucky Public Service Commission that concludes the Commonwealth will need as much as 7000 new megawatts of electric generation by 2025, or roughly 10 new large power plants, in addition to other electric transmission and distribution system upgrades, to meet future energy needs reliably and preserve Kentucky's low-cost advantage.

The section on Kentucky's **Coal** resources includes some new actions taken to address mine safety, in particular the problem of substance abuse in the mines. We also see increased focus on innovative uses for coal: projects that would use the Commonwealth's resources in a manner that adds value to Kentucky's economy while maintaining environmental protections. In our discussion of **Natural Gas**, we again recognize coal as a potential resource for the creation of synthetic pipeline-quality gas. Projects to convert coal-to-liquid and coal-to-gas are being considered, as well as research into the recovery of coal bed methane.

Finally we outline in **Kentucky's Energy Future** the many ongoing research projects that received funding from the Governor's Office of Energy Policy and our partners in the Cabinet for Economic Development.

The report concludes with a discussion of our **Next Steps**. This summarizes some of the new action items we intend to pursue that will further our progress towards the goals of the original document: *Kentucky's Energy: Opportunities for Our Future*.

Energy Efficiency: Saving Energy, Saving Money and Protecting the Environment

National 2006 ENERGY STAR Awards for Kentucky

- On March 30, 2006 Governor Fletcher and representatives from the Environmental Protection Agency (U.S. EPA) and the U.S. Department of Energy (U.S. DOE) recognized GE Consumer & Industrial of Louisville, Toyota Motor Manufacturing North America of Erlanger, the Governor's Office of Energy Policy (GOEP), and the McCreary County Community Housing Development Corporation for their outstanding contribution to the ENERGY STAR



Governor Ernie Fletcher at the ENERGY STAR awards.

program. These national ENERGY STAR award winners were selected from over 8,000 organizations that participate in the ENERGY STAR program. The ENERGY STAR awards acknowledge leading companies and organizations for their commitment to environmental protection through superior energy efficiency.

Recommendations 5, 6

Kentucky ENERGY STAR Partnership - Kentucky's ENERGY STAR Partnership continues to grow. In fact, in 2006 Kentucky became only the fourth state in the nation to be declared an ENERGY STAR partner by the U.S. DOE and U.S. EPA. In 2006, four Kentucky schools became the first in the state to be ENERGY STAR certified.

Recommendation 5

\$95,000 Energy Grant Awarded to the University of Kentucky for ENERGY STAR Projects -

Governor Fletcher announced the award of a \$95,176 grant from GOEP to the University of Kentucky (UK) to promote energy efficiency education throughout the Commonwealth. The grant will be used to support an ENERGY STAR circuit rider who travels across the state promoting ENERGY STAR at events including home and garden shows and electric cooperative annual meetings, as well as a large exhibit at the Kentucky State Fair. In 2006 the UK circuit rider delivered the ENERGY STAR message to more than 14 percent of Kentucky's population at 50 events across the Commonwealth. This grant also helps to educate UK Cooperative Extension Agents about ENERGY STAR and energy efficient practices. These agents, in turn, will take the energy efficiency message to Kentuckians in every county.

Recommendations 5, 6

Kentucky Energy Efficiency Program for Schools (KEEPS) Program - Through a \$77,000 grant to the University of Louisville (U of L), GOEP helped start the Kentucky Energy Efficiency Program for Schools (KEEPS), which offers participating schools a complete package of tools, curriculum, training, coaching and expertise to help participating schools and universities save money through energy efficiency. U of L's Kentucky Pollution Prevention Center (KPPC) provides tools that allow schools to analyze and understand their energy consumption. They also provide training and help the

schools identify and implement low-cost/no-cost energy savings measures that have short payback periods. Energy costs for Kentucky's K-12 public schools now exceed \$126 million annually, up 41 percent since 2000. This program will help schools better manage these costs. The Kentucky affiliate of the National Energy Education Development (NEED) Project supports the K-12 curriculum component of KEEPS.

Recommendations 7, 9

\$100,000 Energy Grant Awarded to Kentucky NEED - Kentucky NEED received a \$100,000 grant from GOEP for the design and delivery of an energy education program for teachers and students in grades K-12. The NEED Project is dedicated to comprehensive, hands-on energy education. Materials and activities are designed to promote a non-biased understanding of the economic and environmental trade-offs of energy consumption and production so that students will be able to make educated decisions in the future. NEED programs traditionally increase interest and knowledge of energy and energy issues. During the year, this program will train over 200 teachers and impact over 13,000 Kentucky students.

Recommendations 5, 9

High Performance Sustainable Schools Workshop -

On March 23 & 24, 2006 GOEP partnered with the Kentucky NEED Project to produce the "High Performance Sustainable Schools Workshop" at Hebron, Kentucky. The workshop was designed for school superintendents, board members, facilities managers, architects and engineers who want to apply high performance concepts to their next construction or renovation project. Participants visited two of Kentucky's first high performance schools, and the experts who led these projects described and showed high performance design elements that improve the way schools are being built. Over 170 architects, engineers, superintendents and principals attended this seminar.

Recommendations 4, 5, 9

Five ENERGY STAR Schools Announced in the Commonwealth - For the first time, Kentucky has ENERGY STAR qualified schools in the state. The five schools include Henry Moss Middle School, Drakes Creek Middle School, Warren East Middle School in Warren County, Isaac Shelby Elementary in Jefferson County, and Caywood Elementary in Kenton County. Achieving the ENERGY STAR certification declares that these schools are some of the most energy-efficient facilities in the Commonwealth. On average these schools use 33 percent less energy than a traditionally built school resulting in significant dollar savings over the life of the school building (in excess of 40 years).

Recommendation 5

Kentucky NEED Holds Energy Education Conference for Teachers - Kentucky NEED, in sponsorship with GOEP, held the "Energy & Education: Making the Connection" conference for educators in June 2006. This fourth annual event has teachers spending five days touring Eastern Kentucky's energy facilities and connecting energy to the classroom. Thirteen formal and non-formal educators representing grades K-12 in Kentucky participated in the program.

Recommendation 5, 9

High Performance Home Workshops - During May and June 2006, GOEP sponsored two, one-day workshops, "High Performance Homes from the Ground Up", as well as four separate half-day workshops, "Increasing Profits Through Tax Incentives" and two half-day sessions, "Advanced Selling Techniques for ENERGY STAR Windows" in cities across Kentucky. The wide-ranging programs featured presenters from Southface, a nationally recognized organization with a 27-year history of providing objective, informative training sessions on how to build better homes.

These workshops focused on the practical aspects of energy-efficient construction that can increase the marketability of the homes. Over 175 builders, HVAC contractors, product suppliers and others attended the eight workshops.

Recommendations 5, 6

ENERGY STAR Homes Take Hold in Kentucky - During 2006, more than 800 ENERGY STAR labeled homes were constructed in Kentucky. There are 45 ENERGY STAR builder partners in the Commonwealth, 10 of whom construct only ENERGY STAR labeled homes. An ENERGY STAR qualified home is typically 30 percent more energy efficient than traditionally built homes, which helps home owners save money on their heating and cooling bills.

Recommendations 5, 6

Energy Assessments - GOEP is collaborating with the University of Louisville (U of L) to offer an energy assessment and technology diffusion service to Kentucky's businesses and industries. Since January 2006 U of L's Kentucky Pollution Prevention Center has conducted 9 energy assessments of small to medium sized manufacturing plants. The Center is on track to surpass the 22 assessments, which identified over \$6 million in annual savings, it conducted the previous year. These assessments help Kentucky's industries stay profitable and stay local. GOEP supports U of L through a \$66,000 grant.

Recommendations 6, 7

Community Support - GOEP is involved in a variety of other activities including support for the Bluegrass Partnership for a Green Community (with Lexington-Fayette Urban County Government, Fayette County Public Schools and the University of Kentucky), the development of a Green and Healthy Schools awards program (with the KY Environmental Education Council and the KY Department of Education), and the annual Bluegrass Energy Expo (organized by Appalachia – Science in the Public Interest). Other GOEP program activities provide direct support for U.S. DOE's Rebuild America and Building Energy Codes and Standards programs as well as providing general information to the public about solar and other renewable energy opportunities.

Recommendation 5, 6

Kentucky 2006 ENERGY STAR Change a Light Day - Kentucky residents are showing that even with relatively low electricity rates, there are opportunities to save. Governor Ernie Fletcher and First Lady Glenna Fletcher encouraged all Kentuckians to take the "ENERGY STAR Change a Light, Change the World" pledge. Kentuckians are learning that switching to light fixtures or bulbs that have earned the ENERGY STAR label can make a real difference. GOEP sponsored an ENERGY STAR Change a Light Campaign event hosted by Lexington Habitat for Humanity at a newly constructed ENERGY STAR home in Lexington, Kentucky. Other partners involved in the event included the U.S. Department of Housing and Urban Development (HUD), Kentucky Housing Corporation (KHC), General Electric, Blue Grass Energy (BGE), Lexington-Fayette Urban County Government (LFUCG), Lexington-Fayette Urban County Housing Authority (LHA), GE Supply, Duke Energy, Toyota and the Kentucky NEED Project.



Recommendation 5

Energy Savings Highlighted at the Kentucky State Fair - GOEP in collaboration with the University of Kentucky (UK) College of Agriculture, General Electric, and Kentucky Touchstone Energy Cooperatives showcased in a 3,000 ft² exhibit at the 2006 Kentucky State Fair featuring

ENERGY STAR qualified home construction practices and ENERGY STAR lighting and appliances.

The State Fair attracts over 600,000 visitors each year, providing an ideal opportunity to educate Kentuckians about the benefits of ENERGY STAR and energy efficiency.

Recommendation 5, 6

Bluegrass Energy Expo - GOEP was one of the sponsors of the Bluegrass Energy and Green Living Expo held September 24-25, 2005. The Lexington event offered the public an opportunity to learn about proven energy solutions, energy-saving products and services, as well as renewable energy technologies. The Expo included an energy trade show, workshops, exhibits, demonstrations and children's activities. It was designed to help attendees learn how investing in energy efficiency can save money and increase a home's comfort and value, while improving Kentucky's economy, environment, and energy security. Approximately 1,000 residents attended the Expo.

Recommendation 5, 6, 11

UK Energy Efficiency in New Construction Grant – Kentucky competed for and was awarded a \$485,000 grant from the U.S. DOE to help teach builders and the public about the benefits of energy efficient buildings. Partners include the University of Kentucky's College of Agriculture, Cooperative Extension Service, Kentucky Community and Technical College System (KCTCS) and GOEP.

Recommendation 5, 6, 50

Kentucky Rural Energy Consortium Launched - Various organizations, state agencies, and corporations comprise the Kentucky Rural Energy Consortium (KREC). The consortium is designed to conduct and facilitate research and educate the public about problems and issues that relate to efficient energy use, renewable energy production and other activities of importance to Kentucky agriculture, rural communities and related industries. GOEP was instrumental in helping to organize the Consortium, which successfully secured \$2 million in appropriations from Congress for KREC's initial administrative, research and development efforts. KREC meets quarterly to review projects and exchange ideas between stakeholders.

Recommendations 5, 6, 11, 42, 48, 50, 51

GOEP Purchased Hybrid SUV for State Vehicle Fleet – In June 2005 GOEP purchased a 2005 Ford Escape Hybrid for the state vehicle fleet. At the time, only seven other hybrid SUVs were in the fleet. The U.S. Environmental Protection Agency (EPA) has given the Ford Escape Hybrid the highest fuel economy rating among SUVs -- 36 miles per gallon for city driving and 31 mpg for highway driving. Its combined rating is 33 mpg, which is based on 55 percent highway driving. That compares with a combined rating of 17 mpg for the large sedans used throughout state government.

Recommendations 2, 11

Energy Efficiency in State Purchasing – In 2005 the Finance and Administration Cabinet began incorporating ENERGY STAR as part of the scoring criteria in the state procurement regulations. This initiative will help ensure that ENERGY STAR products are purchased by state agencies.

Recommendation 2

Utility Savings Council - On February 7, 2005, Governor Fletcher issued Executive Order 2005-122 "Relating to the Establishment of the Utility Savings Council." GOEP secured a \$60,000 federal grant for the Finance and Administration Cabinet (FAC) that provided supplemental funding for a Utility Savings Program Manager for one year. During the year, the energy manager worked to develop baseline energy data and an energy management plan for the facilities managed by FAC. FAC has

made progress in reducing energy use and expenditures through energy saving performance contracting (ESPC) and natural gas procurement strategies.

Recommendations 1, 2, 3

State Vehicle Fleet - Recently, the Finance and Administration Cabinet awarded a contract for an all-electric vehicle. Several state agencies have expressed an interest in utilizing these vehicles to replace units that are primarily used within the confines of the agency property. The Fair Board, Corrections, State Parks, and the Kentucky Horse Park have expressed interest in adding all electric vehicles to their fleet. The contracts also include several hybrid and flex-fuel vehicles. The Division of Fleet Management works closely with agencies when they ask for replacement vehicles and have had great success in “right sizing” vehicles for agencies.

Recommendation 2, 11

Electric Vehicle Test – The Division of Fleet Management is testing the unit pictured below for use in maintenance around the grounds of the state Capitol. Pictured is an all-electric utility vehicle with a top speed of 25 mph and cargo capacity of well over 700 pounds. It has a driving range of approximately 30 miles, depending on carrying loads and terrain. These units could be used in our state parks and possibly as perimeter patrol around prisons.

Since they weigh less, they will do very little or no damage to the grounds where utilized. These could eliminate similar gas-powered vehicles across the state. The 2007 versions move to a 1,400 lb. payload capacity, so they will carry more, utilize no gasoline, and be virtually maintenance free. This is all accomplished at nearly the same cost as comparable gas-powered vehicles, and over the lifecycle will cost much less. Plus they are quiet and pollution free.

Fleet Management can also envision the elimination of gasoline pickup trucks in many areas. These will have additional vehicle, fuel, maintenance, and insurance savings for each truck eliminated from the fleet.

Recommendation 2

Energy Savings Performance Contracting (ESPC) - The Finance & Administration Cabinet is actively pursuing ESPC as an alternative process for accomplishing capital improvement projects. Recently enacted legislation and economic conditions have made ESPC a viable option for implementing energy savings projects funded from utility and operating budgets. Projects utilizing this method do not require line-item appropriations from the legislature. This alternative provides state agencies and post-secondary educational institutions a way to obtain and install new, more-efficient equipment and fixtures. These improvements are funded from savings generated by the implementation of the projects themselves. As of December 2006, there were 13 ESPC contracts that had been awarded by the Finance and Administration Cabinet, totaling over \$50 million. These 13 projects have an estimated savings of \$4.5 Million a year. There are another 13 in various phases of project development.

Recommendation 2

Wholesale Spot Prices:
[West Texas Intermediate, fob; 1/10/07]

CRUDE OIL (\$/barrel)

Jan. 2006: \$63.38
Jan. 2007: \$54.02



Retail Fuel Prices:
[KY Statewide Avg; 1/10/07]

GASOLINE (\$/gallon)

Jan. 2006: \$2.302
Jan. 2007: \$2.185



All-Electric Utility Vehicle

Natural Gas Procurement for State Properties – Based on historical data for the facilities on state property, the Finance and Administration Cabinet has developed usage patterns and forecasts for future consumption of natural gas. This data is then provided as a “nomination” to Columbia Gas of Kentucky (CGK) for “space” in the transmission lines. Stand Energy Corporation (SEC) manages supplier and pipeline nominations, including monthly balancing, to help minimize natural gas costs. The nominations establish the expected amount of natural gas use for the following month. The nominations include “bank management services”, which is, essentially, a contingency for unexpected consumption.

SEC provides consulting services to the department by recommending various purchasing strategies to reduce pricing risks and security of firm natural gas supplies. SEC advises the department to approach natural gas purchases similar to investment portfolio management. These recommendations include combinations of fixed priced volumes, variable purchases, and the use of storage to hedge against price volatility. The monthly price for natural gas is based on the published Appalachia index price of natural gas “delivered to the pipeline”, as reported by the publication “inside FERC” gas market report, plus a fixed fee/Mcf delivered. SEC has sole responsibility for getting the natural gas to the CGK distribution. Cost savings analysis is based on a comparison of SEC purchases vs. CGK current natural gas price tariff.

Through the current natural gas purchasing program, approximately \$1.1 million in costs have been avoided since fiscal year 2004, representing substantial savings. The Department of Corrections and some universities are utilizing a natural gas contract to realize savings as well.

Recommendation 2

Building Code - The Kentucky Office of Housing, Buildings and Construction (HBC) adopted an Energy Code in mid 2005. This new code incorporates the International Energy Conservation Code (IECC) 2003. The adoption and enforcement of this code will and has obligated the Commonwealth to design and build more energy efficiency into our buildings. The newly adopted energy code addresses efficiencies primarily for building envelope, lighting, and heating, ventilation, and air conditioning (HVAC) design requirements. Previously the code primarily focused on new construction. Now the code pays more attention to existing buildings and includes alterations and additions of buildings.

GOEP sponsored the Commercial Energy Code and Beyond training workshops in Lexington and Louisville June 21 and August 23, 2005. In June 2005, GOEP sponsored six Energy Efficiency Workshops for Kentucky that highlighted energy codes and construction practices designed to help achieve energy code standards.

Recommendations 2, 8

Utilities and Energy Efficiency: The Fifth Fuel” Conference - Governor Ernie Fletcher joined Kentucky business, utility, governmental, academic, consumer and environmental leaders in November 2006 in Lexington to discuss an action plan for energy efficiency at the “Utilities and Energy Efficiency: The Fifth Fuel” conference. Governor Fletcher also announced a Kentucky energy efficiency and renewable energy research and development solicitation for \$500,000.

The conference was organized by the GOEP and Duke Energy. Participants discussed initiatives that can be undertaken in Kentucky to address the



Governor Ernie Fletcher promotes energy efficiency at the Fifth Fuel Conference

challenges to increasing energy efficiency and consumer awareness.

Recommendations 5, 17, 42

Kentucky's Energy Efficiency Potential Study by U of L - The purpose of this study is to better understand how additional investments in energy efficiency technologies can contribute to lower energy expenditures and new employment opportunities for residents of Kentucky, as well as generally strengthen economic activity and quality of life.

Recommendations 5, 14, 17

Renewable Energy: A Sustainable Commitment

\$70,000 in Energy Grants Awarded to the Kentucky Clean Fuels Coalition - The Kentucky Clean Fuels Coalition (KCFC) received a \$49,993 grant to establish a network of Kentucky public school bus fleets interested in using biodiesel or biodiesel blends. The grant funds will be used to buy-down the cost of biodiesel. Another \$20,000 grant was awarded to KCFC to provide partial funding for program administration of Kentucky's Clean Cities Program. The goal of KCFC is to improve air quality and support economic development across Kentucky by promoting the use of clean fuels. KCFC is a strong advocate for Kentucky's growing agriculturally based biofuels industry.

Recommendation 11

GOEP Offers Testimony before the Legislature's Special Subcommittee on Energy – GOEP's Director of the Division of Renewable Energy and Energy Efficiency testified before the August 12, 2005 meeting of the subcommittee, which focused on ethanol and biodiesel. Other speakers included Melissa Howell, Executive Director of the Clean Fuels Coalition, Dr. Czarena Crofcheck, Assistant Professor at the University of Kentucky, Rick Geise, Director of Marketing for Griffin Industries and Mick Henderson, General Manager of Commonwealth Agri-Energy.

Recommendations 11, 42

Groundbreakings for Biodiesel Plants and Storage – KCFC, GOEP, and the Governor's Office of Agricultural Policy (GOAP) are working with stakeholders across the Commonwealth to grow Kentucky's biofuels industry. Owensboro Grain Biodiesel, LLC was awarded funds from GOAP for the construction of a biodiesel production facility that will have the capacity to generate as much as 50 million gallons of biodiesel annually. The Commonwealth presented checks totaling more than \$6 million to the company. On May 8, 2006, Estill County Judge Wallace Taylor celebrated the groundbreaking for the construction of a 3.2 million gallon/year biodiesel plant to be located in Irvine.

Recommendation 10, 11, 12

\$295,000 Investment in Seven Energy Research Projects for Kentucky Yields \$1.1 Million from the Kentucky Rural Energy Consortium - On March 8, 2006 Governor Ernie Fletcher announced the award of grants totaling \$295,000 for energy research and development in the areas of renewable energy and energy efficiency. These awards will yield \$1.13 million in federal matching funds from the Kentucky Rural Energy Consortium (KREC). The seven research projects will be conducted by faculty from the University of Louisville (U of L) and the University of Kentucky (UK) and will focus on developing resource-responsible technologies and practices.

Recommendations 11, 48, 50, 51

Energy Research and Development Seed Grants for Renewable Energy and Energy Efficiency - GOEP has funded four research and development grants for renewable energy and energy efficiency initiatives for a total of \$421,461. Areas of research include improved biomass conversion, advanced aluminum melting systems, improved biodiesel production and enzymes for the conversion of corn-fiber to biofuels. This funding is building energy research and development intellectual capacity at Kentucky's public universities. These efforts focus on areas of need for Kentucky's communities, business and industries. Once proven successful through research and development these initiatives will be demonstrated and deployed in the Commonwealth.

Recommendations 11, 48, 50

Biodiesel Bulk Storage in Louisville. Marathon Petroleum joined with the National Clean Cities organization, the Kentucky Soybean Board, and the Kentucky Transportation Cabinet to establish

biodiesel storage at the Louisville fuel terminal at Kramers Lane. The control arm blending system will dispense B2 – B20 blends for distributors via an injection system. A 30,000 gallon storage tank was installed to accommodate the fuel. The storage capacity will enable Jefferson County Public Schools to introduce biodiesel to their school bus fleet.

Recommendations 11, 12

Kentucky Clean Fuels Coalition Grant for Biodiesel Infrastructure – GOEP supported the Kentucky Clean Fuels Coalition (KCFC) with a \$49,993 grant to facilitate the development of storage and distribution systems for biodiesel. Specifically the grant will help develop biodiesel infrastructure in southern and eastern Kentucky, regions that have historically lacked the infrastructure necessary to support the economic use of biodiesel.

Recommendations 11, 12

Biodiesel on School Buses - On August 16, 2005, school superintendents and transportation directors across Kentucky were sent a "Jump on Board with Biodiesel" kit and letter from the Secretaries of Education, Commerce, and EPPC and from the Department of Education Commissioner. The kit, sponsored by the Kentucky Clean Fuels Coalition and the GOEP, was created to explain how fleet managers can begin using biodiesel in their bus fleet in 3 easy steps.

Recommendation 12

Ethanol Plant Tour -- The University of Kentucky, with funding from a grant secured by the GOEP from the Southern States Energy Board, sponsored a May 2005 tour of the Commonwealth Agri-Energy Ethanol plant in Hopkinsville. This event gave participants a firsthand look at the ethanol production process and presented the factors involved in establishing and operating ethanol production facilities. Speakers discussed the benefits of ethanol, the impact of current energy policy on the development of the ethanol market as well as ideas to encourage the development of ethanol plants.

Recommendations 5, 11

Biodiesel Plant Tour -- The Governor's Office of Energy Policy and the University of Kentucky sponsored a tour of the Griffin Industries Biodiesel Plant in Butler, Kentucky, in May 2005. Participants received a firsthand look at the biodiesel production process; speakers and panelists discussed the benefits of biodiesel, the impact of current energy policy on development of a biodiesel market and ideas to encourage development of biodiesel plants.

Recommendations 5, 11

Expanding the Use of Clean Fuels - On February 7, 2005, Governor Fletcher issued Executive Order 2005-124 "Relating to the Transportation Cabinet to Report on the Expanded Use of Clean Fuels in the Commonwealth."

Recommendation 10



Griffin Industries Biodiesel Facility

Ethanol Use in State Vehicles - In October 2005 the Kentucky Transportation Cabinet converted its remaining gasoline fuel storage facility in Frankfort to E-10. The Frankfort Fleet Management Motor Pool fuel site is now an ethanol blend, having a 10,000 gallon side dispensing E-85 and the 5,000 gallon side dispensing E-10 for state agencies to use.

Recommendation 10

Awards for Energy Achievement - On June 13, 2005, GOEP presented two awards for outstanding energy achievement at the Pennyriple Area Development District Annual banquet in Hopkinsville. The 2005 W.W. "Bill" Bryan Memorial Award went to Commonwealth Agr-Energy of Hopkinsville, an ethanol plant cooperatively owned by 2,300 farmers in a 20-county region. The facility produces 23 million gallons of fuel grade ethanol annually. The plant was featured in the subscriber's edition of *Time* magazine.



An SUV fueled with E-85

Recommendation 11

Clean Energy Workshops - On July 11-13, 2005 in Hebron, KY, the Southern States Energy Board, in conjunction with several other biomass and clean energy groups, sponsored a workshop for participants to learn how to develop biomass related policies and incentives. The goal of the workshop was to provide a forum for policymakers and biomass stakeholders to collaborate the development and implementation of biomass-related incentives. One of the highlights of the workshop was a tour of Eastern Kentucky Power's Bavarian Landfill Plant in Boone County, which was the first plant in Kentucky to generate electricity from methane gas produced by decaying municipal waste.

Recommendation 11, 18, 42

Kentucky Adds Biofuels Testing Capacity - The Kentucky Department of Agriculture (KDA) is expanding its consumer protection program in fuel quality to include biofuels along with fossil fuels. Kentucky's fuel law (KRS 363.900 to 363.908) says that KDA is to regulate all motor fuels. To fulfill that mandate more effectively, KDA has built a fuel-testing laboratory equipped with state-of-the-art instruments and engines to test a diverse range of fuels being distributed in Kentucky using the appropriate American Society for Testing and Materials (ASTM) standards. Fuels to be tested include all grades of gasoline, diesel, biodiesel, ethanol, and other products as needed. This enhanced capability will ensure fuel quality is adequately maintained through out the Commonwealth.

Recommendation: 11,12

Kentucky Partners share in \$1.3 million USDOE Grant - The U.S. Department of Energy (USDOE) announced in October 2006 the award of a \$1.3 million dollar grant for an Ethanol (E85) retail refueling corridor as part of the project, dubbed "E85 for I-65—from Lake Michigan to the Gulf of Mexico." Slated to begin in early 2007, the project will see 30 E85 public retail refueling sites established. Three of those will be in Kentucky—two in Louisville and one in Bowling Green—all under the Speedway brand name. Speedway is owned by Marathon Oil Corporation, a leading ethanol blender. Kentucky partners in the grant include KCFC, Marathon Oil Corporation and GOEP.

Recommendations: 11,12

Governor Fletcher Endorses 25 x 25 - In August 2006, Governor Fletcher endorsed the 25x25 initiative, a national vision to produce 25 percent of our nation's energy from renewable sources by 2025. 25x25 is a grassroots-led and supported renewable energy initiative. Across the country, farmers, ranchers, forestland owners and other leaders in the community are coming together in state-level alliances to explore how the 25x'25 vision can help accomplish state energy, environmental and rural development goals. The GOAP and GOEP are working with the University of Kentucky, College of Agriculture and many others to explore and develop new opportunities for Kentucky's farmers in the area of biomass energy production.

Recommendations: 11,12

Kentucky's Low Cost Electricity: Strategic Investment

Electricity Infrastructure Assessment — On February 7, 2005, Governor Ernie Fletcher issued Executive Order 2005-121, directing the Kentucky Public Service Commission to undertake a comprehensive assessment of Kentucky's electricity infrastructure - generation, transmission and distribution - which includes reasonable projections of future electricity requirements.

On August 22, 2005, the Kentucky Public Service Commission issued the comprehensive assessment titled "Kentucky's Electric Infrastructure: Present and Future."

Recommendation 13, 15

House Bill 275 [2006] - On February 24, 2006, Governor Fletcher signed into law House Bill 275 that ensured that large aluminum smelters in Western Kentucky can rely for years to come on the low-cost power that attracted them to that area where they provide over 1,400 jobs. The bill helps ensure that the members of electrical co-ops have the lowest cost electrical power possible. [KRS 279.120].

Recommendation 16

An Assessment of Future Energy Needs - The Kentucky Public Service Commission finalized its report required by Governor Fletcher's Executive Order 2005-121. Based on public hearings in Case No. 2005-0090, the PSC report concludes that the Commonwealth will need as much as 7,000 new megawatts of electric generation by 2025, or roughly 10 new large power plants, in addition to other electric transmission and distribution system upgrades to meet future energy needs reliably and preserve Kentucky's low-cost advantage.

Recommendations 13, 15, 17



The 268-megawatt Gilbert Unit, a circulating fluidized bed boiler generator that began operation in 2005 at Spurlock Station in Maysville. Photo courtesy of East Kentucky Power Cooperative.

Coal: Energy at Kentucky's Feet

House Bill 299 [2006] - House Bill 299, enacted by the General Assembly and signed by Governor Fletcher on April 20, 2006, directs the GOEP to address "Establishment or expansion of Kentucky state government incentives for development, construction, or operation of alternate transportation fuels and synthetic natural gas production, including but not limited to financial incentives, tax incentives, mandating or providing incentives for use alternate transportation fuels and synthetic natural gas by state government, school districts, or utilities, authority to issue bonds, and acquisition and preliminary assessment of industrial sites." [KRS 152.720].



Recommendation 19

Coal Gasification and Biomass-Derived Fuels — House Bill 299 provides that "to ensure that Kentucky will lead the states in securing the energy independence of the United States and will consequently benefit from economic growth and stabilization of the Commonwealth's coal industry and agriculture, the GOEP shall develop and implement a strategy for production of transportation fuels and synthetic natural gas from fossil energy resources and biomass resources."

GOEP has initiated a memorandum of agreement with the University of Kentucky to assess the opportunities for Kentucky for developing industries to produce electricity, transportation fuels, pipeline quality synthetic natural gas, and chemicals through processes that gasify coal and production of transportation fuels from biomass resources.

Recommendation 25

Incentives — The GOEP in 2006 initiated a memorandum of agreement with the University of Kentucky for examination of traditional economic development incentives and identification of other incentives to promote investment in facilities that produce electricity, transportation fuels, pipeline quality synthetic natural gas, and chemicals through processes that gasify coal and that produce transportation fuels from biomass.

Recommendation 19

Energy Summit - GOEP hosted an Energy Summit focusing on ways to enhance economic development in the Commonwealth by industrializing Kentucky's energy resources, including coal and biomass. Speakers included Governor Fletcher, Sen. Jim Bunning and other high-ranking industry, government, academic and trade association members. At the Energy Summit, Governor Ernie Fletcher announced that the Office of Energy Policy was moved to the Governor's Office. The reorganization allows the office to work more closely with the Governor and his staff to implement and promote the Governor's vision of energy policy in the commonwealth.

Recommendations 11, 42

Mine Permitting — On February 7, 2005, Governor Fletcher issued Executive Order 2005-123, "Relating to the Environmental and Public Protection Cabinet Regarding Permitting Activities for Coal," directing the Environmental and Public Protection Cabinet to examine the Cabinet's current policies and practices and how these interact with relevant federal agencies. The EPPC undertook this examination in 2005 and reported its progress to the Special Subcommittee on Energy. The examination is ongoing. On December 12, 2006, Secretary Teresa J. Hill issued a Secretary's Order streamlining the water quality certification process by transferring the Cabinet's authority for issuing

such certifications related to coal mining operations to the Department for Natural Resources.

Recommendation 22

Alternative Uses for Ky Coal — GOEP has initiated a memorandum of agreement with the University of Kentucky to assess the availability and performance with Kentucky coals of technologies that are available for producing liquid and gaseous fuels from coal.

Recommendation 25

Site Bank for Facilities — GOEP has contracted with an engineering firm for development of a site bank identifying and characterizing sites in or near the eastern and western Kentucky coal fields suitable for facilities that produce electricity, transportation fuels, pipeline quality synthetic natural gas, and chemicals through processes that gasify coal.

Recommendation 25, 54

FutureGen — GOEP submitted a candidate site for the \$1 billion federal/industry FutureGen project for demonstrating production of hydrogen and electricity through gasification of coal with near-zero emissions of pollutants and sequestration of carbon dioxide; Kentucky was one of four states to propose sites that met all of the base requirements. While the Kentucky site was not chosen as a finalist; much was learned and is being incorporated into the Site Bank project described above.

Recommendation 25

Miner Training and Education — Governor Fletcher's Executive Budget for the FY 2007-2008 biennium included \$3 million per year for establishment of education programs in the Kentucky Community and Technical College System (KCTCS) for miner training and education relating to other careers related to the coal mining industry. Also, GOEP provided \$120,000 to fund the Kentucky Coal Executive Advisor in KCTCS for FY06.

Recommendation 26

Federal Funding for Miner Training — On December 21, 2005, Kentucky received a \$3 million grant from the U.S. Department of Labor under the President's High Growth Job Training Program. The funds are to address training needs in coal mining through the use of simulators, distance learning, mobile classrooms, and traditional classroom instruction.

Recommendation 27

Mine Safety — On April 21, 2006, Governor Fletcher signed into law Senate Bill 200 that made major improvements in mine safety requirements. SB 200 contains requirements for emergency action plans, improved ventilation plans, increased inspections for underground mines and two-way communication between the working section of the mine and the surface.

Recommendation 29

Clean Coal Technology - 2005 Tax Modernization bill included a provision that Kentucky should examine its regulatory policies and traditional economic development incentives to design and implement policies that promote investment in clean coal technology.

Recommendation 20

Retail Fuel Prices:
[KY Statewide Avg; 1/10/07]

DIESEL (\$/gallon)

Jan. 2006: \$2.455
Jan. 2007: \$2.487



Substance Abuse in the Mines - The Dept. for Natural Resources convened a Mine Substance Abuse Task Force in 2005. The final report was issued in Dec. 2005 and was the basis for HB 572, passed during the 2006 General Assembly. The Task Force's Final Report is available at www.dnr.ky.gov. HB 572 addresses substance abuse within the mining industry, including screening as a condition of certification and incentives to the industry to test existing employees. The legislation included an incentive for mining companies in the form of worker's compensation insurance credit for companies that implement assistance programs for employees with substance abuse problems and requires annual substance abuse awareness training for all miners. Kentucky's program is the first of its type in the nation. DNR is in the process of developing regulations for this certified drug-free workplace provision of the law.

Recommendation 29, 30

Appalachian Regional Reforestation Initiative - The reforestation of coal-mined lands using high-value hardwood trees is being promoted under the Appalachian Regional Reforestation Initiative (ARRI) -- a joint initiative which includes the Fletcher Administration, the University of Kentucky and the coal industry. More than 1 million native hardwood trees have already been planted throughout the Kentucky coalfields.

The member states that have signed the ARRI agreement are working to increase the planting of economically desirable trees on mine sites through the use of Forestry Reclamation Approach - a five-step reclamation process proven by forestry research to increase tree survival and productivity.

Recommendation 32

Coal Slurry Reuse - The GOEP issued a \$98,740 grant to UK's Department of Mechanical Engineering to develop a process for disposing of fine coal refuse slurry.

Recommendation 33

Awards for Energy Achievement - The Award for Leadership and Innovation in Energy Policy went to Mr. Don Bowles of Madisonville (President of Charolais Coal Corporation). Mr. Bowles was instrumental in developing a technology for recovering waste coal from spent mine sites and leading the development of coal-bed methane in Kentucky.

Recommendation 25

Area Mining Regulation - The Environmental and Public Protection Cabinet created a task force to review the federal regulatory program implemented under Section 404 of the Clean Water Act (CWA). The task force examined the feasibility of crafting a federally-approvable, state 404 program that would streamline the permitting process and enhance the state's protection of our environment. The task force examining the issue has members from the coal industry as well as members from the environmental community. The EPPC has suspended efforts to assume the Section 404 program given the uncertainty over the scope of the Clean Water Act created by the U.S. Supreme Court decision in *Rapanos v. U.S. EPA*.

Recommendation 34, 35

Kentucky's Natural Gas: Untapped Potential

Gas Transmission Authority - The Kentucky Gas Transmission Authority (KGPA) created from HB 225 during the 2005 session has held two organizational meetings and promulgated regulations governing its activities. The Finance and Administration Cabinet has also begun to solicit projects for the Authority to consider. Regulations and bylaws can be viewed at finance.ky.gov. The GOEP has also begun to solicit projects for the Authority to consider.

Wholesale Spot Prices:
[Henry - Hub; 1/10/07]

NATURAL GAS (\$/MMbtu)

Jan. 2006: \$8.650
Jan. 2007: \$6.270



Recommendations 37, 38

Coal Bed Methane – GOEP has provided \$86,250 in grant funding to the Kentucky Geological Survey for a project to explore the economic potential of coal bed methane in the Eastern Kentucky Coal Field. The production of coal bed methane may be one way to use this extensive energy resource that is increasingly being idled. The production of methane would also be beneficial in terms of new job opportunities and additional state revenues from the produced gas. Coal bed methane could also play a major role in providing the hydrogen needed to power fuel cells that are being fast-tracked for implementation in the electric power and transportation industries.

Recommendation 39

Synthesis Gas via Co-Gasification of Coal and Coal Bed Methane – GOEP has provided \$149,842 in grant funding to Western Kentucky University to develop a method for producing synthesis gas with a flexible hydrogen-to-carbon-monoxide ratio based on the co-gasification of coal and coal bed methane. The feedstock includes two Eastern Kentucky high-sulfur bituminous coals and simulated coal bed methane. Successful completion of this project will address questions surrounding conversion efficiency, the catalytic function of coal ash, and mercury capture.

Recommendation 41

Western Kentucky Deep Gas Exploration – GOEP has provided \$46,000 to the University of Kentucky to develop a consortium of oil and gas industry partners to encourage long-term natural gas exploration in Kentucky. This partnership will seek private funding and federal grants to focus on a major study of a geologic structure known as the Rough Creek Graben in western Kentucky to assess its natural gas producing potential.

Recommendation 39

Kentucky's Energy Future: A Perpetual Commitment

Energy Policy Elevated to Governor's Office: Governor Ernie Fletcher announced on October 20, 2006, that the Office of Energy Policy has been moved to the Office of the Governor and will now be called the Governor's Office of Energy Policy. The reorganization allows the Office, which was previously part of the Commerce Cabinet, to work more closely with the Governor and his staff to implement and promote the Governor's vision of energy policy in the Commonwealth. The announcement was made at the 2006 Kentucky Energy Summit, held that day in Louisville.

Recommendation 42

Clean Coal Conference in Appalachian States: Governor Fletcher also announced two additional energy initiatives in October 2006 at the Appalachian Regional Commission (ARC) conference in Pikeville. The first, a Clean Coal Conference [held April 25-27, 2007 in Lexington] focusing on clean coal technologies and the role of the Appalachian states in utilizing that technology for future energy production.

Recommendation 44

The second, an executive order calling for the following:

Executive Order on Fuel Efficiency, Energy Research, Retail Rate Design, and Energy Education:

The Finance and Administration Cabinet shall improve the fuel efficiency of Kentucky's transportation fleet by rightsizing and procuring more fuel-efficient and alternative-use replacement vehicles.

Recommendation 1

The Office of Energy Policy shall commit \$1,000,000 during this biennium to the research, development, deployment and commercialization of renewable energy and energy efficient projects. This shall include a study of the net benefits of incentives for consumers to purchase ENERGY STAR appliances.

Recommendation 51

The Office of Energy Policy shall produce a study analyzing the impact of incorporating energy efficiency as a goal of retail rate design. Because of our low cost of electricity, incentives may not exist to increase efficiency to either the utilities or consumers.

Recommendation 2

The Office of Energy Policy shall continue to implement and support education programs for energy efficiency to reduce energy use and to reduce utility bills for the citizens of the Commonwealth.

Recommendation 2

Kentucky Energy Watch - GOEP produces Kentucky's only electronic, weekly update of energy prices and issues that helps Kentuckians assess energy trends throughout the year. The two-page update captures current events of local interest relating to energy issues and highlights energy commodity prices.

Recommendation: 42

Mercury Removal - Western Kentucky University, under contract with GOEP, recently completed a project to investigate mercury removal from coal fired power plant emissions. The project examined mercury emission levels and mercury chemistry through pollution control equipment. The report will be available at energy.ky.gov in June.

Recommendation 42

Heating and Energy Assistance - Governor Ernie Fletcher approved a budget appropriation increase of nearly \$8 million from the Cabinet for Health and Family Services to increase the federal appropriations for the Low-Income Heat and Energy Assistance Program (LIHEAP), bringing total Fiscal Year 2006 appropriations for LIHEAP to \$23,645,700.

Recommendation 46

Energy Security - The GOEP participated in the Midwest Regional Energy Assurance Exercise. The exercise simulated a region-wide energy emergency event that tested state energy assurance plans and was designed to improve coordination among federal, state, local and private sectors. Exercises like this one are an important way to improve the reliability of the nation's energy infrastructure. This exercise was performed to better prepare Kentucky and the nation for energy emergencies, whether caused by natural disasters or terrorist actions.

In August and September 2005 GOEP worked with federal and state agencies to mitigate the impact of hurricanes Katrina and Rita on petroleum fuel supply to the Commonwealth. GOEP coordinated waivers from the US Environmental Protection Agency that improved the petroleum supply and inventories throughout the Commonwealth.

Recommendation 52

The Governor's Office of Energy Policy has:

- initiated a memorandum of agreement with the University of Kentucky to (a) assess the opportunities for Kentucky in developing industries to produce electricity, transportation fuels, pipeline quality synthetic natural gas, and chemicals through processes that gasify coal and production of transportation fuels from biomass resources; (b) identify and assess incentives for development of the industries; and (c) assess the availability of and performance with Kentucky coals of technologies for producing liquid and gaseous fuels from coal.

Recommendation 54

Retail Fuel Prices:
[KY Statewide Avg; 1/10/07]

HEATING OIL (\$/gallon)

Jan. 2006: \$2.201

Jan. 2007: \$2.093



Retail Fuel Prices:
[KY Statewide Avg; 1/10/07]

PROPANE (\$/gallon)

Jan. 2006: \$2.063

Jan. 2007: \$2.066



Governor Ernie Fletcher promotes Energy Security at the Energy Policy Summit

Research and Development - The GOEP has initiated programs to provide financial support to Kentucky's public universities and industry for energy-related research, development and demonstration; and for coal education projects. Total funding awarded during FY06 and FY07 totals nearly \$7.5 million. Listed below, as an example, are some of the numerous projects that received funding from GOEP.

Recommendation 48

- Building and Refining a Geologic Sequestration Framework for the Region (Kentucky Part of MRCSP, Phase 2)
- Coals as Sequestration Reservoirs (Kentucky Part of SECARB, Phase 2)
- Geochemical Analyses of Surface and Shallow Gas Flux and Composition Over a Proposed Carbon Sequestration Site in Eastern Kentucky
- Differentiating Microbial Pathway and Membrane Adaptations for Enhanced Performance in Extreme Environments
- Novel Catalytic Approaches for Bio-Oil Upgrading
- Weather Responsive Ventilation for Residential Energy Efficiency and Indoor Air Quality
- Development of an Ethanol Pilot Scale Facility to Evaluate the Effect of Collection, Storage, and Pretreatment of Corn Stover
- Production of Biomass Briquettes as an Alternative Fuel Source
- Development of an Integrated Solar Heat Pipe System for Improving Building Energy Efficiency
- Photocatalysts for Solar Energy Conversion

- Consortium Development for Western Kentucky Deep Gas Exploration
- Advanced Scaleable Clean Aluminum Melting Systems
- Ceria-based Binary Oxide Catalysts for the Production and Purification of H₂
- Development of Heterogeneous Catalysts for Improved Biodiesel Production
- Directed Evolution of Enzymes for the Conversion of Corn-Fiber for Biofuel Production
- Development of Dry Fine Coal Processing
- Resolution of the Technical Obstacles Impeding the Commercial Development of Briquetted fuels from Coal and BioMass Wastes
- Economical Recovery of Fly-Ash Derived Magnetics and Evaluation for Coal Cleaning
- High-level Production of Multiple Cellulolytic and Hemicellulolytic Enzymes in Plant for the Improvement of Biomass Conversion

- An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II
- Impact of Multi-Pollution Control Devices on Mercury Chemistry and Transportation
- Exploring for Coal Bed Methane in Eastern Kentucky
- Support of Cash Creek Generation IGCC
- Development of a Novel Process for Disposing Fine Coal Refuse Slurry to Eliminate Slurry Ponds
- Vortecone Modification for Emission Control at Coal-Fired Power Plants
- Demonstration of a Novel Dry Coarse Coal Process for Improving Mining Economics
- Coal Fuels Alliance
- The Fabrication of Value-Added Cement Products from Circulating Fluidized Bed Combustion Ash
- Carbon Materials from Eastern Kentucky Coals

- Co-Gasification of High Sulphur Coal with Coal-Bed Methane to Produce Synthesis Gas
- Aluminum Melting Furnace Design Optimization Using Integrated Modeling
- Kentucky Industrial Wood Wastes as a Renewable Energy Resource

- Improving Biodiesel Production Efficiency
- Construction of a Fixed Bed Reactor for Continuous Production of Biodiesel
- Canola and Sunflower for Oil/Biofuel Production in Kentucky
-
- Identifying Barriers and Developing Preliminary Solutions to the Extraction of Thin-Seam Coal Resources
- High Value Applications for Flue Gas Desulphurization Materials
- Feasibility of Capture and Utilization of CO₂ from Kentucky Power Plants by Algal Systems
- Development and Evaluation of Clay Binders for High Efficiency Fine Coal Recovery by Froth Flotation
- Improved Energy Efficiency and Economic Recovery of Eastern Kentucky Coal Using a Novel Dry Clean Coal Technology
- Coal-to-Liquid Facility – Eastern KY
- Site Bank for Coal-to-Liquid / Coal-to-Gas Facility
- Broadband Network in Mines
- Global Nuclear Energy Partnership
- Coal-to-Liquids Facility – Western KY
- American Energy Security
- Pike County Energy Farm
- Coal Gasification Facility – Western KY
- Perry County CTL Facility

Next Steps

The Comprehensive Energy Strategy is a living document and the policy initiatives undertaken since its release in 2005 are, in many ways, first steps. The administration will continue with its commitment to implementing sound energy policy that benefits all Kentuckians and all segments of Kentucky's economy. As energy policy issues take on even more urgency at the federal level, it is imperative that we maintain our resolve in finding solutions to the challenges that confront us.

Ensuring Our Nation's Energy Security

Many of these challenges are a result of our nation's increasing dependence on imported petroleum. Today, the United States imports more than 60% of its petroleum and most of these imports are from highly unstable regions of the world. Kentucky is in a unique position to help the nation reduce this dependence and ensure a stable supply of necessary transportation fuels. GOEP will continue to work with legislators, industries, universities, local officials, the federal government and others to implement the provisions of HB 299, the "Kentucky Energy Security National Leadership Act." The Act finds that the United States and Kentucky contain vast resources of coal and agricultural materials from which clean transportation fuels can be produced, using advanced and environmentally superior technologies that are currently available.

As a complement to its implementation of HB 299, GOEP, with money appropriated by the Kentucky legislature, has provided funding to the Southern States Energy Board's American Energy Security initiative in 2006 and will continue this support in 2007. The Southern States Energy Board released the American Energy Security Study in 2006. As co-chair of the SSEB during the development of this study, Governor Fletcher maintains his commitment to this national initiative to implement a plan for the United States to establish energy security through the production of alternative oil and liquid transportation fuels from its vast domestic resources, including coal and biomass. The plan also emphasizes the need for improved domestic enhanced oil recovery programs using carbon dioxide injection and storage, increased voluntary transportation fuel efficiency, and energy conservation.

Meeting the Needs of the Future

Another energy challenge is meeting the Commonwealth's need for the estimated additional 7,000 megawatts of electric generation by 2025 as determined in the Public Service Commission's report, "Kentucky's Electric Infrastructure: Present and Future." To address this need, energy efficiency becomes even more important. It's our only short-term solution, and will be extremely valuable going forward. However, in a state with traditionally low electric rates, the incentive for individuals, businesses, and government agencies to adopt energy efficiency has been weak.

As one of its on-going missions, GOEP has implemented a number of programs to spur energy efficiency in all end-use sectors. During 2007, GOEP will undertake a study of the impact of incorporating energy efficiency as a goal of retail rate design as authorized by Executive Order 2006-1298. The administration also promotes legislation that expands a number of the federal EPACT 2005 tax credits for the purchase of certain energy-efficient products and building materials in Kentucky. GOEP will also continue to collaborate with members of the National Action Plan for Energy Efficiency to address challenges to energy efficiency and identify activities that can overcome these challenges.

GOEP will continue its commitment to energy education and awareness. For example, during Earth Week 2007, GOEP and the National Energy Education Development (NEED) Project provided small grants for Earth Day 2007 activities that promoted the ENERGY STAR "Change a Light, Change the World Campaign."

"Ensuring sufficient energy resources is critical to Kentucky's economic well-being and growth – it's

our foundation, but it's our children's future. While our state is blessed with abundant coal resources and reasonably-priced electricity, we must continue to find more creative ways to use energy wisely. The economic and environmental benefits of energy efficiency can only be achieved by everyone working together." –Governor Ernie Fletcher, speaking at "Utilities and Energy Efficiency: The Fifth Fuel" conference held on November 28, 2006 at the Radisson Plaza Hotel, Lexington, Kentucky.

Protecting the Environment and Enhancing Kentucky's Economy

As key to Kentucky's economy as coal has been, the Commonwealth must seek ways to maintain a place for coal in our electricity generation portfolio. Toward that end, the state will continue its work to ensure the economic and regulatory environment is conducive to the deployment of advanced clean coal electric generation—generation that not only reduces the emissions of currently regulated pollutants but that offers the potential to reduce carbon emissions, operates more efficiently, and allows co-firing with renewable resources such as biomass.

The administration will be working with the Kentucky General Assembly to identify and implement policies that ensure advanced clean coal generation is deployed in the Commonwealth. GOEP will also release the first round of sites across the state that have been identified as having potential for large-scale industrial energy facilities—facilities that can not only generate electricity, but that can produce synthetic fuels, synthetic natural gas, biofuels, and chemicals from our abundant coal and biomass resources.

Regional and National Collaboration

Since release of the Comprehensive Energy Strategy, the administration has been engaged in a number of activities at the regional and federal level, including the Appalachian Regional Commission, the Southern States Energy Board, the Strategic Unconventional Fuels Task Force, and the National Governors' Association. GOEP will continue to work with these groups by co-hosting conferences, contributing reports, and ensuring Kentucky's energy policy goals and initiatives are given voice at the national level.

Energy supply and demand are critical to Kentucky's economic well being and growth. Historically, Kentucky's citizens have been fortunate to have had some of the lowest electricity rates in the nation. There are no guarantees that these rates will remain among the lowest, especially if we do not continue implementing proactive initiatives, such as ensuring Kentucky's coal-fired electric generation has a viable future; ensuring Kentucky's citizens and industries reap the benefits of energy efficiency; ensuring Kentucky's abundant biomass and coal resources are utilized effectively and efficiently to contribute to our nation's growing transportation needs. Such a balanced approach has been the cornerstone of Governor Fletcher's policy objectives. We will build on these initiatives at the same time as we continue working cooperatively with Kentucky's legislators, industry representatives, educational institutions, and citizens.

Legislative Update

SB196 [2007] was recently signed into law by Governor Ernie Fletcher. This legislation creates a new definition for "Industrial energy facility" and requires the Environmental and Public Protection Cabinet to establish specific time periods for actions to be taken in the consideration of permit applications for these facilities. Expediting permitting should speed the construction of these facilities that are so integral to the Commonwealth's energy strategy.

An "industrial energy facility" is a facility that produces transportation fuels, synthetic natural gas, chemicals, electricity, or other useful products through a gasification process using coal, coal waste, or biomass resources, and costs in excess of seven hundred fifty million dollars (\$750,000,000) at the time of construction.

Energy Strategy Recommendations

Energy Efficiency: Saving Energy, Saving Money and Protecting the Environment

Recommendation 1:

The Commonwealth of Kentucky, through the Finance and Administration Cabinet, should dedicate staff toward implementing an aggressive and sensible utility savings initiative throughout state government and other state-funded institutions to improve energy efficiency.

Recommendation 2:

The Commonwealth of Kentucky should develop and implement procurement policies that encourage sustainable practices, products and energy efficiency.

Recommendation 3:

The Commonwealth of Kentucky should encourage high performance, energy-efficient design for new construction of state facilities.

Recommendation 4:

The Commonwealth of Kentucky should require interagency cooperation to promote energy efficiency initiatives.

Recommendation 5:

The Commonwealth of Kentucky should encourage the continued development of public-private partnerships dedicated to promoting energy efficiency through education and outreach.

Recommendation 6:

The Commonwealth of Kentucky should work with industries, businesses, schools, universities and communities to promote and give preference to energy-efficient products and practices.

Recommendation 7:

The Commonwealth of Kentucky should support energy assessment initiatives that will help our industries and businesses improve their profitability through energy efficiency and resource management.

Recommendation 8:

The Commonwealth of Kentucky should examine its building codes and specifications to determine if enhanced energy efficiency gains are possible through progressive policy.

Recommendation 9:

The Commonwealth of Kentucky should pursue funding opportunities to strengthen K-12 energy education.

Renewable Energy: A Sustainable Commitment

Recommendation 10:

The Commonwealth of Kentucky should require its state fleet to utilize a 10 percent blend of ethanol (E10) and gasoline and a two percent blend of biodiesel (B2) wherever these clean fuels are available, and encourage Kentucky's post-secondary institutions to adopt similar initiatives.

Recommendation 11:

The Commonwealth of Kentucky should design and implement policies to promote the production, consumption and availability of biodiesel and ethanol within Kentucky.

Recommendation 12:

The Commonwealth of Kentucky should design policies to promote the utilization of a 20 percent blend of biodiesel in the public school bus fleet.

Energy Strategy Recommendations (Continued)

Kentucky's Low Cost Electricity: Strategic Investment

Recommendation 13:

The Commonwealth of Kentucky should develop a comprehensive statewide assessment of Kentucky's electricity infrastructure— generation, transmission and distribution—which includes reasonable projections of future electricity requirements.

Recommendation 14:

The Commonwealth of Kentucky should periodically update the comprehensive statewide assessment to reflect changes in both electric infrastructure and future electricity requirements.

Recommendation 15:

The Commonwealth of Kentucky assessment should serve as a “strategic blueprint” for policymakers to determine future investment requirements in Kentucky's electricity generation, transmission and distribution infrastructure.

Recommendation 16:

The Commonwealth of Kentucky should utilize the “strategic blueprint” to develop policies that promote sufficient investment in electricity infrastructure—generation, transmission and distribution—to sustain Kentucky's low cost electricity into the future.

Recommendation 17:

The Commonwealth of Kentucky should identify impediments to investment in electricity generation, transmission and distribution and develop policies to promote investment while ensuring that appropriate environmental protections are maintained and local voices are heard.

Recommendation 18:

The Commonwealth of Kentucky should design and implement policies that promote, but do not mandate, the use of renewable energy resources in Kentucky's electricity generation portfolio.

Coal: Energy at Kentucky's Feet

Recommendation 19:

The Commonwealth of Kentucky should examine its regulatory policies and traditional economic development incentives to design and implement policies that promote investment in clean coal technology.

Recommendation 20:

The Commonwealth of Kentucky should develop policies to provide incentives for the purchase of Kentucky coal at clean-coal facilities.

Recommendation 21:

The Commonwealth of Kentucky should ensure that the Kentucky Bond Pool Fund is sufficiently enhanced to promote the growth and productivity of Kentucky's coal mining industry.

Recommendation 22:

The Commonwealth of Kentucky should examine its current mine permitting policies and identify streamlining opportunities.

Recommendation 23:

The Commonwealth of Kentucky should design and implement policies to promote electricity generation at Kentucky mine sites.

Recommendation 24:

The Commonwealth of Kentucky should design and implement policies to promote capital investment within the coal industry.

Recommendation 25:

The Commonwealth of Kentucky should support projects and initiatives intended to open new markets for Kentucky coal.

Recommendation 26:

The Commonwealth of Kentucky should partner with post-secondary institutions and industry to develop and invest in a program targeted at workforce development within the coal industry.

Recommendation 27:

The Commonwealth of Kentucky should partner with post-secondary institutions and industry to pursue federal resources to implement workforce development initiatives for the coal mining industry.

Energy Strategy Recommendations (Continued)

Recommendation 28:

The Commonwealth of Kentucky should partner with the Southern States Energy Board to develop a model workforce development initiative that can be replicated in other coal-producing states.

Recommendation 29:

The Commonwealth of Kentucky should partner with the federal government, the mining industry, employee organizations and with other coal producing states to study the extent of the drug and alcohol problems in the mines.

Recommendation 30:

The Commonwealth of Kentucky should partner with the mining industry and employee organizations to develop policies that promote drug screening and rehabilitation within the mining industry.

Recommendation 31:

The Commonwealth of Kentucky should pursue federal funding opportunities to promote drug screening and rehabilitation within the mining industry.

Recommendation 32:

The Commonwealth of Kentucky should continue to promote progressive reclamation practices through reforestation and the creation of wildlife habitats that support environmental restoration and enhanced economic development and tourism opportunities.

Recommendation 33:

The Commonwealth of Kentucky should design and implement policies that promote the recovery of the energy resources inherent to abandoned coal refuse and the proper reclamation of those properties.

Recommendation 34:

The Commonwealth of Kentucky should monitor the proposals of the Office of Surface Mining surrounding the issues of area mining and determine what appropriate changes should be made to the current state regulatory program to bring it in line with proposed federal rule changes.

Recommendation 35:

The Commonwealth of Kentucky should support dialogue between appropriate energy and environmental parties to determine the policy options related to area mining within the context of the proposed federal rule changes.

Recommendation 36:

The Commonwealth of Kentucky should design and implement policies to promote the transformation of waste into value-added products, particularly directed at opportunities to reduce the environmental impact of coal-fired emissions.

Kentucky's Natural Gas: Untapped Potential

Recommendation 37:

The Commonwealth of Kentucky should develop and implement policies that encourage investment in intrastate natural gas pipelines, gathering lines and distribution capacity.

Recommendation 38:

The Commonwealth of Kentucky should determine the opportunities for increased natural gas storage capacity and, if appropriate, promote its development.

Recommendation 39:

The Commonwealth of Kentucky should promote research to accurately determine the extent of coal bed methane and natural gas reserves in Kentucky and its prominent locations.

Recommendation 40:

The Commonwealth of Kentucky should design and implement policies to promote the recapture of methane from the state's landfills.

Recommendation 41:

The Commonwealth of Kentucky should identify the potential of coal bed methane value-added industries and, if feasible, design economic development strategies to grow those industries around the state's coal bed methane reserves.

Energy Strategy Recommendations (Continued)

Kentucky's Energy Future: A Perpetual Commitment

Recommendation 42:

The Commonwealth of Kentucky should place a high-level emphasis on energy policy to continue the vital work necessary to ensure Kentucky's low cost energy future, the responsible development of Kentucky's energy resources and Kentucky's commitment to environmental quality.

Recommendation 43:

The Commonwealth of Kentucky should engage federal regulatory and energy agencies to ensure that the state has a "place at the table" while energy issues are being discussed.

Recommendation 44:

The Commonwealth of Kentucky should investigate the emerging impact of global and national policies and institutions on Kentucky's energy future.

Recommendation 45:

The Commonwealth of Kentucky should partner with post-secondary institutions, industry and the federal government to develop and invest in programs targeted at workforce development within the energy industry.

Recommendation 46:

The Commonwealth of Kentucky should partner with community-action agencies and the energy industry to provide energy assistance to Kentucky's neediest citizens.

Recommendation 47:

The Commonwealth of Kentucky should promote the awareness of utility check-off programs and encourage widespread participation.

Recommendation 48:

The Commonwealth of Kentucky should partner with the state's universities, private industry and non-profit organizations to aggressively pursue federal research and development resources that are dedicated—but not limited—to clean-coal technology, energy efficiency, hydrogen technology and renewable energies.

Recommendation 49:

The Commonwealth of Kentucky should initiate a full-scale effort to attract and site the federal FutureGen facility in Kentucky.

Recommendation 50:

The Commonwealth of Kentucky should encourage and assist the state's universities, private industry and non-profit organizations to leverage available federal energy research and development resources.

Recommendation 51:

The Commonwealth of Kentucky should promote greater collaboration between Kentucky's universities to synergize ongoing energy research efforts at individual institutions.

Recommendation 52:

The Commonwealth of Kentucky should partner with the federal government, local governments and private industry to promote enhanced security of Kentucky's critical energy infrastructure.

Recommendation 53:

The Commonwealth of Kentucky should partner with local governments and private industry to pursue federal funding opportunities that promote enhanced security of Kentucky's critical energy infrastructure.

Recommendation 54:

The Commonwealth of Kentucky should partner with the federal government to enhance the nation's energy security through research and development directed at transforming Kentucky's energy resources into the resources that fuel the nation.

Executive Orders of Governor Ernie Fletcher

Executive Order 2005-120 - February 7, 2005

1. The Kentucky Public Service Commission shall consider, investigate and issue a report related to the role of the federal government and international institutions, as they might bear on an energy policy for the Commonwealth of Kentucky.
2. The report referenced herein shall identify federal and international policies or actions that affect the ability of the Public Service Commission to establish in Kentucky electricity and natural gas rates that are fair, just, and reasonable. The report also shall identify how such policies or actions affect the ability of Kentucky-based energy producers to export energy supplies in interstate and international markets.
3. The Public Service Commission shall issue the report referenced herein to the Governor no later than six (6) months from the effective date of this Order.

Executive Order 2005-121 - February 7, 2005

1. The Kentucky Public Service Commission shall develop, in conjunction with the Commerce Cabinet and the Environmental and Public Protection Cabinet, a Strategic Blueprint to promote future investment in electric infrastructure for the Commonwealth of Kentucky to protect Kentucky's low-cost electric advantage, to maintain affordable electricity rates for all Kentuckians and to preserve Kentucky's commitment to environmental protection.
2. The Strategic Blueprint referenced herein shall analyze the projected needs for new electricity generation, transmission, and distribution in Kentucky going forward and include the following information: the status of electricity generation, transmission, and distribution in Kentucky; available sources of electricity supply for Kentucky ratepayers; projected demands for electricity in Kentucky through 2025; the existence of any barriers to investment in generation, transmission, and distribution infrastructure in Kentucky; the existence of any barriers to the utilization of technologies in generation, transmission and distribution of electricity that will minimize impacts to the environment; strategies directed at the utilization of technologies to improve the efficiency of electricity service in Kentucky; opportunities to promote the utilization of renewable energy resources in Kentucky's electricity portfolio; and such other information as the Public Service Commission determines may help to ensure future investment in electricity infrastructure to meet Kentucky's needs.
3. The Public Service Commission shall issue a report to the Governor containing the Strategic Blueprint no later than six (6) months from the effective date of this Order and shall periodically update the report to reflect changes in infrastructure and future electricity requirements.

Executive Order 2006-692 - June 20, 2006

1. There is hereby established a Utility Savings Council that is created for the purpose of evaluating energy costs throughout state government. The Council shall study energy use and utility procurement practices of all state agencies and make recommendations, such as energy savings performance contracting and improved energy management that will produce cost savings, with the goal of saving at least 10% in energy costs annually throughout state government.
2. The Utility Savings Council shall be attached to the Office of Energy Policy, Commerce Cabinet for administration purposes. The Council shall be comprised of the following members or their

designees:

- a. The Secretary of the Finance and Administration Cabinet,
- b. The Secretary of the Commerce Cabinet,
- c. The Secretary of the Transportation Cabinet,
- d. The Secretary of the Justice Cabinet,
- e. The Secretary of the Environmental and Public Protection Cabinet,
- f. The Secretary of the Education Cabinet,
- g. The Secretary of the Health and Family Services Cabinet,
- h. The Secretary of the Personnel Cabinet,
- i. The Secretary of the Economic Development Cabinet, and
- j. The Chairman of the Public Service Commission.

3. The Cabinet Secretaries identified above and the Chairman of the Public Service Commission shall take all necessary actions to effectuate the provision of the Order.

Executive Order 2005-123 - February 7, 2005

1. The Environmental and Public Protection Cabinet shall create a working group comprised of representatives from both the Department of Environmental Protection and the Department for Natural Resources;
2. The working group shall examine current policies and practices regarding how departments currently interact with each other and with relevant federal agencies such as the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the Office of Surface Mining;
3. The working group shall seek opportunities to improve coordination and increase efficiency among the departments and with the federal regulatory agencies;
4. The working group shall consult with other state agencies, the regulated community and the public;
5. The working group shall identify opportunities to streamline permitting activities while preserving Kentucky's commitment to environmental quality;
6. The working group shall prepare recommendations and submit them to the Secretary of the EPPC within nine months (9) of the effective date of this Executive Order.
7. The Secretary of the Environmental and Public Protection Cabinet shall review recommendations and implement those recommendations that further the principles of the Commonwealth Energy Policy Task Force.

Executive Order 2005-124 - February 7, 2005

1. By July 1, 2005 the Transportation Cabinet and the Finance and Administration Cabinet will establish procurement contracts that maximize the market availability of ethanol blend (E10) and biodiesel blend (B2).
2. Employees using conventional vehicles in the Transportation Cabinet's fleet will select either E10 or B2 as their primary fueling option.
3. The Transportation Cabinet will maximize the use of ethanol blend (E85) in its fleet of Flexible Fuel Vehicles.
4. The Transportation Cabinet will promote clean fuels by educating employees about clean fuels, identifying vendors, and holding employees accountable for electing clean fuels for use in state vehicles.
5. The Transportation Cabinet and the Finance and Administration Cabinet will report annually by July 1, 2006 to the Office of Energy Policy on its progress promoting the use of ethanol and biodiesel blends.

Executive Order 2006-1298 - October 12, 2006

1. The Finance and Administration Cabinet will improve the fuel efficiency of Kentucky's transportation fleet by rightsizing and procuring more fuel-efficient/alternative-use replacement vehicles.
2. The Office of Energy Policy will commit \$1,000,000 during this biennium to the research, development, deployment and commercialization of renewable energy and energy efficient projects. This shall include a study of the net benefits of incentives for consumers to purchase ENERGY STAR appliances.
3. The Office of Energy Policy will produce a study analyzing the impact of incorporating energy efficiency as a goal of retail rate design.
4. The Office of Energy Policy will implement education programs for energy efficiency to reduce energy use and to reduce utility bills for the citizens of the Commonwealth.

Executive Order 2006-1297 - October 12, 2006

1. The Kentucky Department of Education will assist School Districts in designing and planning high performance, energy-efficient school facilities that can be ENERGY STAR certified.
2. The Kentucky Department of Education will formally request that the Capital Planning Advisory Board develop or adopt recommended practices or guidelines incorporating energy efficiency and high performance criteria for the design and construction of all new government and public university buildings.
3. The Public Service Commission will complete the ongoing Congressional mandate under the Energy Policy Act of 2005 regarding smart metering.

Executive Order 2006-1299 - October 12, 2006

1. The Governor's Office of Energy Policy is hereby established within the Office of the Governor and shall be headed by an Executive Director appointed by the Governor pursuant to KRS 12.040. The Executive Director shall report to the Governor. The Executive Director may employ such personnel as necessary to perform the duties, functions, responsibilities, and powers of the Office.

a. The Division of Renewable Energy and Energy Efficiency is hereby established within the Governor's Office of Energy Policy and shall be headed by a director appointed pursuant to KRS 12.050.

b. The Division of Fossil Fuels and Utility Services is hereby established within the Governor's Office of Energy Policy and shall be headed by a director appointed pursuant to KRS. 12.050.

c. The Division of Energy Research Development and Demonstration shall be established within the Governor's Office of Energy Policy and shall be headed by a director appointed pursuant to KRS. 12.050.

d. The Administrative Services Branch shall be established within the Governor's Office of Energy Policy and shall be headed by a manager.

[concurrently, equivalent agencies within the Commerce Cabinet are abolished].

Acknowledgements

We recognize and thank the dedicated staff and management of the Governor's Office of Energy Policy:

Marie Anthony
Martye Britton
Amanda Cook
Greg Guess
Dennis McCully
Brandi Robinson
Brad Stone

William Bowker
James Bush
John Davies
Talina Mathews
Donna Norton
Alan Shikoh
Karen Wilson

Helpful Links

www.eia.doe.gov

U.S. DOE - Energy Information Administration

www.dogc.ky.gov

Kentucky Division of Oil and Gas Conservation.

www.eere.energy.gov

Information on Energy Efficiency and Renewable Energy from U.S. Dept. of Energy

www.americanenergysecurity.org/studyrelease.html

The American Energy Security Study by the Southern States Energy Board

www.uky.edu/KGS

The Kentucky Geological Survey

www.gnep.energy.gov

U.S. Dept. of Energy's Global Nuclear Energy Partnership

www.caer.uky.edu

University of Kentucky's Center for Applied Energy Research (CAER)

www.us-cap.org

U.S. Climate Action Partnership

www.wku.edu/ICSET

Western Kentucky University – Institute for Combustion Science and Environmental Technology

www.coaleducation.org/kcmec/default.htm

Kentucky Division of Fossil Fuels and Utility Services

www.energystar.gov

U.S. Environmental Protection Agency's ENERGY STAR Program

louisville.edu/org/kiesd

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